

CLAIMS

What is claimed is:

1. A method for forming a scroll component comprising the steps of:
providing a metallic powder;
providing a mold defining an involute scroll form cavity;
injecting said mixture into said mold to form a green involute scroll
form;
removing said green involute scroll form from said mold; and
sintering said green involute scroll form to form an involute scroll
form.
2. The method of claim 1 further comprising the steps of:
providing a binder; and
combining the metallic powder with said binder to form a mixture.
3. The method of claim 1 wherein providing a metallic powder
includes providing a powder comprising iron.
4. The method of claim 3 wherein providing a powder comprising iron
further comprises providing a powder comprising elements selected from the
group carbon, nickel, molybdenum, chromium, copper and mixtures thereof.

5. The method of claim 1 wherein providing a metallic powder is providing an iron powder having a mean diameter are of greater than 5 micrometers.

6. The method of claim 3 wherein providing a metallic powder comprising of iron includes providing a powder having elements selected from the group of 0.7-3.5% carbon, 0-10% copper, 0-5% nickel, 0-5% molybdenum, 0-2% chromium and mixtures thereof.

7. The method of claim 1 wherein sintering said green involute scroll form is sintering said green involute scroll form until said involute scroll form comprises at least 90% per volume pearlitic structure.

8. The method of claim 1 wherein sintering said green involute scroll form is sintering said green involute scroll form until said involute scroll form comprises 0-20% free graphite.

9. The method of claim 8 wherein said involute scroll form comprises about 12% free graphite.

10. The method of claim 1 wherein providing a metallic powder includes providing iron powder having a plurality morphologies having at least two average diameters.

11. The method of claim 1 further including the steps of:
providing metal coated graphite particles; and
mixing said graphite particles with said metallic powder.
12. The method of claim 11 wherein providing metal coated graphite particles includes providing graphite particles coated with copper.
13. The method of claim 1 further including the steps of providing magnesium sulfide; and
mixing said magnesium sulfide with said metallic powder.
14. The method of claim 1 further including the step of machining said green involute scroll form after it is removed from said mold.
15. The method of claim 1 wherein sintering said green involute scroll form is sintering said green involute scroll form until said involute scroll form has a density of more than about 6.8 gm/cm^3 .
16. The method of a forming a scroll component comprising the steps of:
providing an involute scroll form comprised of metallic particles;
providing a baseplate; and
coupling said involute scroll form to said base.

17. The method of claim 16 wherein coupling said involute scroll form to said base includes capacitors discharge welding the involute scroll form to said base.

18. The method of claim 16 wherein coupling said involute scroll form to said base includes providing a brazing material adjacent said involute scroll form; and

applying sufficient heat to melt said brazing material.

19. The method of claim 18 wherein providing a brazing material adjacent said involute scroll form is providing a brazing material comprising:

about 30-50% copper;

about 10-20% manganese;

about 3-25% iron;

about 0.5-4% silicon;

about 0.5-2% boron; and

balance is nickel.

20. The method of claim 18 wherein applying sufficient heat to melt said brazing material is locally resistance heating the brazing material.

21. The method of claim 18 further including the steps of:
providing metal coated graphite particles having a plurality sizes;

and

mixing said graphite particles with said metallic powder.

22. The method of claim 16 further comprising:
providing a hub comprised of metal powder; and
coupling said hub to said base.